

## ABSTRACT OF THE DISCLOSURE

Agile frequency converter and method, IF-RF level exchange process, and notch filtering techniques. System noise and spurious levels generated by channel frequency conversion is reduced in applications requiring broadband combining of frequency converters to form multichannel composite signal. Converter employs two-stage frequency conversion process, with gain exchange system using variable pre-mixer gain and variable post-mixer attenuation to maintain constant RF output signal power level. For those few conversion frequencies where distortion component(s) cannot be filtered without degrading desired signal, IF-RF level exchange is optimized for meeting the carrier-to-distortion (C/D) ratio specifications at slight expense of noise level for that channel only, while still meeting aggregate combined carrier-to-noise (C/N) specification requirements. Optimal apportionment of level exchange for each channel depends on specific frequency rejection capability of spurious components and is matched to filtering capability and stored within non-volatile memory of a microcontroller used in the frequency converter.

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